p	t	k
b	r	g
	s	
m	n	ŋ
	l	

All consonants can appear in word initial and intervocalic positions. In addition, consonant clusters of nasal homorganic with following obstruent (including /r/) occur word medially as shown in (1).

1) a. ['lom.bo] 'taro sp.'
   b. ['sin.ro] 'morning'
   c. ['in.si] 'dance type'
   d. [giŋ.'gi.ŋi] 'strong'

The voiceless obstruents /p t k/ are unaspirated; /k/ is normally uvular [q]. The voiced obstruents /b g/ are full stops utterance initially, but invariably become their fricative counterparts [β ɣ] in intervocalic position, as shown in (2-3).

2) a. [boko] 'cassowary'
   b. [tuβa] 'to cook'
3) a. [gelo] 'mangrove'
   b. [maɣa] 'village'

The fricative allophones [β] and [ɣ] are not maintained in loanwords as shown in (4-5).

4) a. [robet] 'Robert'
   b. [kalabus] 'gaol' (Tok Pisin)
5) a. [sigaret] 'cigarette'
   b. [nogut] 'not good' (Tok Pisin)

The alveolar /r/ shows variation between the trill [r], the flap [ɾ] and the stop [d] as shown in (6).

6) a. [sin.ro] ~ [sin.ɾo] ~ [sin.do] 'morning'
   b. [ru.re] ~ [ru.ɾe] ~ [ru.de] 'to destroy'

Phonetically, the most frequent allophone is [ɾ], especially in fast speech. Native speaker intuition, psycholinguistic testing in working on vernacular preschool primer materials, discussions with educated Mengen speakers on the topic "*d* versus *r*," the production of native authored materials and the likely influence of English and Tok Pisin orthography all

point to the identity of this phoneme as /r/, not /d/. Loanwords with initial /d/ also show variation for older speakers, as shown in (7).

7) a. [raen] 'Dan'
   b. [dos] ~ [ros] 'Rose'

Loanwords with intervocalic /d/ may even be realised with [t] as in (8).

8) [sepeti] 'Zebedee'

Regarding loanwords in general, the overall tendency is for older speakers to modify the forms to fit Mengen phonological structures, while the younger, often times more literate, speakers are freer in their speech and tend to pronounce the forms as they are pronounced in the source language.

In addition to the syllable-final nasals illustrated in (1) above, some words display alternations between word final closed and open syllables as shown in (9).

9) a. [tapu] ~ [tap] 'completive aspect'
   b. [atu] ~ [at] 'to come'
   c. [lamasi] ~ [lamas] 'coconut'
   d. [kaniŋi] ~ [kaniŋ] 'food'
   e. [talulele] ~ [talulel] 'man's name'

Similar alternations occur word medially in reduplicated and compounded forms. All these optionally closed syllables will be discussed in 3.4.

Phonetic palatalisation and labialisation of consonants occurs in Mengen as shown in (10-11).

10) a. [sʲaɰ] 'my stomach'
    b. [gaʲu] 'to return'
11) a. [lʷelʷe] 'ants'
    b. [koβʷe] 'to chop it'

Palatalisation and labialisation of consonants are discussed more fully in 3.3.

Lengthened consonants also occur in Mengen as shown in (12).

12) a. [bʌlːʌge] 'to ask'
    b. [mʌmːʌ] 'hot'
    c. [kʌnːʌ] '3s alienable possession'

They are not rearticulated, but are simply of longer duration than are nonlengthened consonants. The syllabification of lengthened consonants is discussed in 3.1.

2.2 Vowels

The following are the Mengen vowel phonemes.

i	u
e	o
	a

All vowels can appear in word initial, interconsonantal, and word final positions. (Vowel sequences are discussed in 3.2.)

The phonemes /a/ and /o/ are raised to [ʌ] and [ǫ] respectively in the environment of consonant length. This occurs before all lengthened consonants, as well as after lengthened nasals and /l/. Compare the forms in (13-17) which show this allophonic variation.

13) a. [mama] 'yawning'
b. [mʌmːʌ] 'hot'
14) a. [kana] '3s inalienable possession'
b. [kʌnːʌ] '3s alienable possession'
15) a. [gona] 'a feast'
b. [gǫnːʌ] 'gathered, slack'
16) a. [bale] house'
b. [bʌlːʌ] 'to carry (on the chest)'
17) [pʌtːoto] 'another'

Among younger speakers there are two additional vowel phones [ɔ] and [æ] as shown in (18).

18) a. [mɔ] 'taro' (young speakers)
b. [kæ] 'sun' (young speakers)
c. [mæna] 'heavy' (young speakers)

Among older speakers, however, these words are pronounced with the diphthongs [aǫ] and [aę] as shown in (19).

19) a. [maǫ] 'taro' (older speakers)
b. [kaę] 'sun' (older speakers)
c [maęna] 'heavy' (older speakers)

Both younger and older speakers have the diphthongs [aį] and [aų] as in the forms in (20).

20) a. [taį] 'who'
b. [taų] 'sugar'

Thus, I conclude that the diphthongs [aǫ] and [aę] underlie the phones [ɔ] and [æ] respectively in (18). Further justification for this analysis is that both young and old speakers have [a.e] across a morpheme boundary as in (21).

21) a. ['ka.e] 'to leave it' (*ka* 'to leave' + *e* 'patient marker'
b. ['ba.e] 'to send him' (*ba* 'to send' + *e* 'patient marker'

The process accounting for the coalescence of /ae/ and /ao/ as [æ] and [ɔ] for younger speakers must be constrained so as not to apply across morpheme boundaries.[3]

Only a single minimal pair has been discovered to show potential phonemic vowel length, namely [i] '3s pronoun' and [i:] 'affirmative', but this is questionable since [i:] 'affirmative' either tends to stand alone or clearly precedes a phonological pause and the statement to be affirmed. However, the vowel in the penultimate syllable of many qualitative terms can show grammatically conditioned length to convey the idea of 'very', as in (22-23).

22) a. [gaβili] 'long'
b. [gaβi:li] 'very long'
23) a. [raɣmana] 'very'
b. [raɣma:na] 'very, very'

2.3 Stress

Primary stress is often realized by a lengthening of the syllable peak of the stressed syllable. Stress is phonemic in Mengen as seen in the minimal pairs in (24-26).

24) a. ['ma.si] 'good, well'
b. [ma.'si] 'hole'
25) a. ['ma.ra] 'loose stones on beach'
b. [ma.'ra] 'sunrise'
26) a. ['i.lo] 'type of fish'
b. [i.'lo] 'type of dance'

Examples (27-30) below show phonemic stress in three and four-syllable words.

27) a. ['pa.to.ŋe] 'say, pronounce'
b. [pa.'to.ŋe] 'to pile, gather it together'
28) a. ['i.so.pa] 'hot'
b. [i.'su.ra] 'gradually'

[3] Or across syllable boundaries, but the syllable boundary would be triggered by the morpheme boundary in this case.

29) a. [ˈpi.ro.si.a] to bore a hole'
b. [pi.ˈro.si.a] 'to comb, spread'
30) a. [ˈka.βi.to.te] 'to trim it'
b. [ka.βi.ˈtu.lu] 'to decorate'

3. Syllables

3.1 Structure

The phonetic syllable in Mengen can be characterised as in (31).

31) (C) V ($\left\{ \begin{matrix} C \\ V \end{matrix} \right\}$)

That is, the phonetic syllable consists of a single vowel preceded by an optional consonant onset and followed by an optional coda consisting of a single offglide or consonant.

As noted in 2.1, the only syllables obligatorily closed with a consonant all occur word medially. As illustrated in example (1) above, repeated here as (32), all such syllable final consonants are nasals homorganic with the following obstruent.

32) a. [ˈlom.bo] 'taro sp.'
b. [ˈsin.ro] 'morning'
c. [ˈin.si] 'dance type'
d. [giŋ.ˈgi.ŋi] 'strong'

The forms in (32) are all monomorphemic. Syllable final nasals also result from the morphological process illustrated in the paradigm in (33) where either /m/ or /n/ is inserted before its respective homorganic consonant to form the continuative aspect.

33)	Base form	Continuative	
a.	[ˈto.te]	[ˈton.te]	'cut'
b.	[ˈa.βe]	[ˈam.be]	'try'
c.	[ma.ˈsi.si]	[ma.ˈsin.si][4]	'collapse'
d.	[ˈru.re]	[ˈrun.re]	'demolish'
e.	[ˈpo.pe]	[ˈpom.pe]	'carry (on back)'

Nasals may also be inserted before nasals in some verbs to form continuative aspect. The result is surface consonant length as shown in (34).

[4] If there are identical consonants separated by a single vowel, the nasal is inserted before the second consonant; thus *[man.ˈsi.si].

34) a. [inu] [in:u] 'drink'
b. [mume] [mum:e] 'wash'

The velar nasal is never inserted to make the continuative aspect. Instead, reduplication, an alternative process for forming the continuative aspect, applies in forms with velar stops as shown in (35).[5]

35) a. ['go.ga] [go.'ga.ga] *['goŋ.go] 'deceive'
b. ['ka.ka.lʷe] [ka.'ka.lo.ka.lʷe] *['kaŋ.ka.lʷe] 'sweep'

Consonant length is phonemic in Mengen. Contrastive pairs are given in (36-41).

36) a. [mologa] 'to scold'
b. [mǫl:ǫga] 'stone'
37) a. [osi] 'to vanish'
b. [ǫs:i] 'to be vanishing'
38) a. [ate] 'easy'
b. [ʌt:e] 'to bring it'
39) a. [go.'na] 'a feast'
b. ['gǫn:ʌ] 'gathered, slack'
40) a. [mama] 'yawning'
b. [mʌm:ʌ] 'hot'
41) a. [tuŋa] 'to give'
b. [tuŋ:ʌ] 'gift'

Examples have been found of lengthened alveolar consonants /t s n l/ and lengthened nasals /m ŋ/. No examples have been found of lengthened voiced stops /b r g/ or lengthened voiceless stops /p k/.

Since closed syllables occur in Mengen, I assume the syllable break is in the middle of the lengthened consonant; for example, (36b) is [mǫl.lǫ.ga]. Given this analysis, the nonoccurrance of lengthened /b g/ is expected since, as is noted in 3.4, all consonants other than /b g/ can optionally occur as syllable codas. It is possible that examples of lengthened /r p k/ will still be found.

The forms (36b-41b) are all monomorphemic. Other lengthened consonants mark the continuative aspect as shown in the paradigm in 42.

42)	Base form	Continuative	
a.	[ta.ra]	[tʌt.ta.ra]	'sit'
b.	[o.si]	[ǫs.si]	'vanish'

[5] Continuative aspect is also formed by reduplication in some roots with nonvelar obstruents. Thus, verb roots with nonvelar obstruents need to be marked as to whether the continuative aspect is formed by nasal insertion or by reduplication.

Thus, continuative aspect can be marked by reduplication or nasal insertion as noted above, or by consonant lengthening.

Since unambiguous closed syllables occur in Mengen, the question arises as to whether diphthongs should be considered closed syllables, with the offglide in the position of the coda consonant. Syllables ending in offglides are restricted to those with one of the five diphthongs [aɻ̯ aɹ̯ aɻ aɹ oɹ̯]. Note that /a/ carries a full complement of offglides but is never an offglide itself. Examples are given in (43-47).

43) a. ['gaɻ.gaɻ] 'a boring insect'
b. [kaɻ] 'sun'
c. ['aɻ.aɻ] 'that person at a distance'
44) a. ['aɹ̯.lu] 'above, upon'
b. ['taɹ̯.taɹ̯] 'younger brother'
c. ['paɹ̯.ki] 'grass'
d. [taɹ̯] 'who?'
45) a. ['laɻ.gu] 'my male in-law'
b. ['paɻ.lo] 'chicken'
c. ['aɻ.aɻ] 'that person at a distance'
46) a. ['saɹ] 'to discard'
b. [ma.'taɹ.taɹ] 'being afraid'
47) a. ['koɹ̯.pa.ge] 'to create by speaking'
b. ['poɹ̯] 'fire'

One argument against interpreting diphthongs as closed syllables is based on the observation made above that all obligatorily closed syllables are word medial. As seen in numerous forms in (43-47), diphthongs are not limited to word medial position. A second argument against the consonantal status of offglides is based on contrasts between high and mid offglides. If [aɹ̯] and [aɹ] were interpreted as /ay/ and /aw/, respectively, new consonantal phonemes would be needed for the mid offglides in [aɻ] and [aɻ].

On the other hand, contrasts do exist between [V_1V_2] and [$V_1.V_2$] as can be seen by comparing the (a) and (b) forms in (48-53).

48) a. ['paɹ̯.ki] 'grass'
b. [pa.'i.so.pa.ge] 'to heat it up'
49) a. [taɹ̯] 'who?'
b. [ta.'i.na] 'rounded end of house'
50) a. ['paɻ.lo] 'chicken'
b. [pa.'o.si.a] 'to relinquish'
51) a. ['saɹ] 'to discard'
b. [sa.'u] 'violent wind'

52) a. [baɛ̨] 'and'
b. ['ba.e] 'send him'
53) a. ['kaɛ̨] 'sun'
b. ['ka.e] 'to leave it'

Almost all the contrastive pairs differ in stress placement, however. Diphthongs never have stress on the offglide, while most sequences of [$V_1.V_2$] have stress on V_2. In the few forms exhibiting [$V_1.V_2$] in which stress does not occur on V_2, such as (52b) and (53b), a morpheme boundary separates the two vowels.

Since, as was shown in 2.3, stress is phonemic in Mengen, it must be marked in the phonemic forms. Thus, a pair like (48a,b) would be differentiated as in (54a,b).

54) a. /sau/ 'to discard'
b. /sa'u/ 'violent wind'

The difference in syllabification would follow from the stress pattern: /u/ would desyllabify and be realised as an offglide following /a/ if unstressed as in (54a), while it would be syllabic if stressed as in (54b). Similarly, the morpheme boundary in (52b) and (b) would block the desyllabification of /e/. This is natural in light of the observation in 2.2 that the morpheme boundary blocks the coalescence of /ae/ as [æ] among young people. Mengen does not include phonemic diphthongs, then; all diphthongs arise from sequences of vowels in which the second desyllabifies.

Desyllabification occurs only when the resulting diphthong is one of those listed above: [aɛ̨ ai̯ ao̯ au̯ oi̯]. In all other sequences, a vowel will not desyllabify following another vowel regardless of stress, as shown in (55).

55) a. ['lu.a.'lu.a] 'two at a time'
b. ['ni.a] 'bed'
c. ['gi.o.pi.si.gi] 'to shake the leg'
d. ['gi.o] 'spear'
e. ['ke.o.a] 'banana species'

3.2 Vowel Sequences

Phonetically, Mengen displays sequences of up to five vowels and glides. Chart 1 lists the sequences of two syllabic vowels that have been observed.

CHART 1

	ae	ai	ao	au
ea		ei		eu
ia	ie		io	iu
oa				
ua	ue	ui		

As shown in (48-53), the sequences with /a/ as the first member may be either realised as a diphthong or a sequence of two syllable peaks. The sequences from Chart 1 that must be syllabified as two syllables are listed with examples in (56).

56) a. *ea* [ˈle.a] 'fish'
b. *ei* [keˈi.so] 'a wind'
c. *eu* [o.reˈu.nu] 'scorpion'
d. *ie* [ˈgi.e] 'pig'
e. *iu* [i.u] 'anger'
f. *ia* [ˈgi.a] 'name'
g. *io* [ˈgi.o] 'spear'
h. *oa* [po.a.li ŋi] 'type of dance'
i. *ua* [lu.a] 'two'
j. *ue* [ru.e] 'catfish'
k. *ui* [mu.i] 'type of shrub'

Nineteen cluster patterns of three or more vocoids have been observed. They are listed in Chart 2.

CHART 2

aɐ̯.a	e.aɪ̯.u	i.aʊ̯	u.aɐ̯
aɐ̯.aʊ̯	e.aʊ̯	ɪaʊ̯	
aɪ̯.a	e.aʊ̯.a		
aɪ̯.o	e.o.a	ʊi.ʊi	
aʊ̯.a	ʊi.ʊi.a		
aʊ̯.e	ʊo.ʊo		
aʊ̯.a			
aʊ̯.e			
a.uɪ̯			

Only eight of these sequences occur in monomorphemic forms. Seven of these are illustrated in (57).

57) a. [ˈlaɪ̯.o] 'afternoon'
b. [ˈpaʊ̯.a] 'nut species'

c. ['ma.la.ɰi] 'young woman'
d. ['ke.o.a] 'banana species'
e. [jaɰ] '1s'
f. [ɰi.'ɰi.ŋa] 'fish species'
g. ['ɰo.ɰo] 'mother's brother'

The eighth sequence occuring in monomorphemic forms shows two syllabification patterns as shown in (58).

58) a. ['ba.ga.le.aɰ] 'taro species'
b. [la.βe.a.'u.na] 'taro species'

These two patterns are accounted for by the process of diphthongisation, since the /u/ in (58b) is stressed.

The remaining eleven sequences in Chart 2 arise only across morpheme boundaries. Five arise when the patient marker is added to a particular class of transitive verb stems; the patient marker is /e/ after a back vowel and /a/ after a front vowel, as seen in (59).

59) a. ['taɋ.e] 'to evict him'
b. ['taɰ.e] 'to scrape it'
c. ['baɟ.a] 'to cause it'
d. ['taɕ.a] 'to climb it'
e. [ɰi.'ɰi.a] 'to span it'

Two sequences are in deictic forms formed from [aɋ] 'there' added to [i] 'it' and [laɕ] 'that' as shown in (60).

60) a. ['i.aɋ] 'this (person/thing) there'
b. ['laɕ.aɋ] 'that (person/thing) there'

The sequence [e.aɰ.a] arises by the addition of the marker [-a-] which separates generic terms and a specific type of the generic form in (61).

61) [ba.ga.le.aɰ.a.kaɰ.'a.ra] 'taro species' (lit. a type of taro called *bagaleau*)

The sequence [u.aɕ] arises when the suffix [-aɕ] is added to conjunctions to mark the second of the conjoined words as a person as in (62).

62) ['ri.lu.aɕ] 'with' (*ri* '3p' + *lu* 'two' + *aɕ* 'person conj')

The locative [a] is part of the vocoid sequence [aɋ.a] in (63).[6]

[6] This locative is closely related to the locative [na].

63) [ˈtaǫ.a.pe] 'to walk' (lit. 'to walk, located down on the ground)
(*tao* 'to walk' + *a* 'LOC' + *pe* 'below')

Finally, the sequence [e.aɻ.u] in (64) is a part of compound verb focusing on [iu] 'angry'.

64) [pa.li.ˈka.re.aɻ.u] 'angry together with' (lit. 'mutually having their anger')

3.3 Palatalisation and Labialisation

As noted in 2.1, Mengen has phonetic palatalised and labialised consonants. In this section I will justify the claim that palatalised and labialised consonants are not unit phonemes or complex onsets. Instead, they arise from CV sequences.

All consonants can be palatalised or labialised. Palatalised consonants only occur before back vowels and [aɻ] (but not [aɻ]) as shown in (65), while labialised consonants occur before all vowels except [u] (including [aɻ] but not [aɻ])[7] as shown in (66).

65) a. [ˈgʲa.na] 'his name'
b. [ˈmʲo.ka] 'tapioca'
c. [ˈkʲu.e] 'to call him'
d. [kʲaɻ] 'to draw (water)'

66) a. [ˈsʷa.li] 'sick'
b. [ˈmʷe] 'snake'
c. [ˈlʷi.a] 'to enter it'
d. [ˈkʷo.kʷo] 'expression of disgust'
e. [ˈkʷaɻ.na] 'odor'

Forms with palatalised consonants before back vowels contrast with sequences of [Ci] followed by back vowels as can be seen by comparing (65a,b) with (67a,b).

67) a. [ˈgi.a] 'name (unpossessed)'
b. [ˈgi.o] 'spear'

The forms in (67) are representative of all forms in which the sequence [Ci] is followed by a back vowel. In all such forms, the [i] is stressed. I claim that palatalised consonants are underlyingly [Cɨ] sequences in which the vowel is not stressed. Similarly, labialised consonants are underlying [Cu] or [Co] sequences in which the vowel is not stressed.

The first argument for this analysis of palatalisation is based reduplication in the continuative aspect. Verbs take one of three patterns of reduplication: whole reduplication,

[7] There are few occurrences of labialised consonants before [o] or [i].

in which the entire root is reduplicated; initial reduplication, in which the initial segments are reduplicated; and medial reduplication, in which the first two segments of the second syllable are reduplicated.

The verb root *kʲu* 'to summon' undergoes initial reduplication, while the verb root *gaʲu* 'to return' undergoes medial reduplication.The resulting forms are given in (68).

68) a. [ˈki.kʲu.e] 'to be summoning him'
b. [ga.ˈli.lʲu] 'to be returning'

The palatalisation in (68) surfaces as the full vowel [i] in the reduplicated continuative forms. This is evidence that the palatalised consonants are derived from /Ci/ before another vowel; if [Cʲ] was underlyingly a single segment we would expect a form like (68) to be reduplicated as (69).

69) *[ˈkʲu.kʲu.e]

A second argument that palatalised and labialised consonants are underlyingly /CV/ is based on affixed forms as shown in in (70-72).

70) a. [ˈsa.pʲa] 'to whip it' (*sapi* + *a* 'patient'
b. [ˈsa.pi.ŋe] 'will whip it' (*sapi* + *ŋ* 'IRR' + *e* 'patient'
71) a. [ˈgo.lʷe] 'to crack it' (*golu* + *a* 'patient'
b. [ˈgo.lu.ŋe] 'will crack it' (*golu* + *ŋ* 'IRR' + *e* 'patient'
72) a. [ˈgo.lʷe] 'to steal it' (*golo* + *a* 'patient'
b. [ˈgo.lo.ŋe] 'will steal it' (*golo* + *ŋ* 'IRR' + *e* 'patient'

The stem final *i* in *sapi* surfaces as palatalisation when followed by a back vowel in (70a), but as a full vowel when followed by a consonant in (70b). Similarly, the stem final *u* in *golu* and *o* in *golo* both surface as labialisation when followed by vowels in (71a) and (72a), but as full vowels when followed by a consonant in (71b) and (72b).

A third argument that labialised consonants are underlyingly [CV] is based on slow speech. As shown in (71-72), affixation can help determine the underlying vowel for labialised consonants. This is not possible, however, in monomorphemic forms like those in (73-74).

73) a. [kʷe] 'rain'
b. [kʷe] 'betelnut'
74) a. [gʷe] 'road'
b. [gʷe] 'child'

In normal speech, the phonetic forms for 'rain' and 'betelnut' in (73) are identical; the same applies to 'road' and 'child' in (74). No morphologically related forms have been found that

will help determine the underlying vowel in these cases. In slow speech, however, all speakers, regardless of age or educational level, pronounce (73a) and (74a) with [u], but (73b) and (74b) with [o]. In each case these forms are pronounced as one syllable, even in slow speech.

In summary, palatalised consonants are derived from sequences of consonant plus unstressed [i] before the back vowels [a o u] and before the diphthong [au] which ends in a back vowel. Labialised consonants are derived from sequences of consonant plus unstessed [u] or [o] before any vowel or diphthong except [u] or [au].

An area related to palatalisation and labialisation is that of syllable initial [j] and [w]. First, it be noted that syllable initial [w] or [j] is very infrequent. For example, only about 15 root beginning with [w] or [j] have been recorded in the language, although several are used quite often such as those in (75).

75) a. [ja.la] 'there it is'
b. [jaɥ] '1sg'
c. [ju] 'angry'
d. [wa.lo] 'rope'
e. [wo.wo] 'mother's brother'

One of these forms, [jala] (75a), [j] morphophonemically represents '3sg' which in its isolated form is *i* 'he, she, it'. Therefore, its underlying form is /iala/. Another form, [ju] (75c), is similar phonetically to the form [kʰu] 'to call' which has been shown to be underlyingly *kiu* as seen in *kikʰu* 'to be calling'. I propose, therefore, that phonetic [j] and [w] are derived from /i/ and /u/ before a vowel.

3.4 Vowel Deletion

As noted in 2.1 and 3.1, while some words contain medial syllables which are obligatorily closed with nasal consonants, no words end in obligatorily closed syllables. Some words, however, optionally end in closed syllables as shown in (76).

76) a. [ta.pu] ~ [tap] 'compl. aspect'
b. ['a.tu] ~ [at] 'to come'
c. [la.'ma.si] ~ [la.'mas] 'coconut'
d. ['ta.lu.le.le] ~ ['ta.lu.lel] 'man's name'
e. [na.'ŋu.ni] ~ [na.'ŋun] 'to suppose'

The use of the consonant-final variants frequently follows generational lines. Older speakers often prefer to say place names with a final vowel, while younger speakers generally prefer the "shorter" option without a final vowel as in example (77).

77) a. /malakuru/ (older speakers) ~ /malakur/ (younger speakers)
b. /kaetona/ (older speakers) ~ /kaeton/ (younger speakers)
c. /totongapala/ or /totongpala/ (older speakers) ~ /totongpal/ (younger speakers)

In the case of loan words, both older and younger speakers generally prefer to add a word final vowel in harmony with the immediately preceding vowel as shown in (78).

78) a. [ɰil:iama] 'William'
b. [simoni] ~ [simono] 'Simon'
c. [aɰsiki] 'hausik'
d. [ɰalisi] 'wailis'

However, students and teachers involved in the Mengen prep school programme, perhaps because they are all generally from the set of younger speakers, will likely *not* add final vowels to the following educational loanwords.

79) a. [sok] 'chalk'
b. [bilak bot] 'black board'

I propose that all Mengen words end in an underlying vowel for the following reasons. First, in slower speech the vowel final form is considered correct and can be readily elicited in all forms.

Secondly, the final vowel is not predictable as shown in (80-81).

80) a. [giŋ.'gi.ŋi] ~ [giŋ.'giŋ] 'strong'
b. [giŋ.'gi.ŋa] ~ [giŋ.'giŋ] 'strength'
81) a. ['ro.ŋo] ~ ['roŋ] 'completed'
b. ['ro.ŋa] ~ ['roŋ] 'conclusion'

The word final vowels in (80-81) are the only surface indication marking the difference between a qualifier and its related abstract noun.

In general, word-final vowel deletion applies more commonly after /ŋ/ than after any other consonant. Typical forms are shown in (82-84).

82) a. [kamaŋa] ~ [kamaŋ] 'your hand' (< *kama* 'hand' + *ŋa* '2sg poss')
b. [ŋiŋiŋi] ~ [ŋiŋiŋ] 'your tooth' (< *ŋiŋi* 'tooth' + *ŋi* '2sg poss')
c. [kaoŋao] ~ [kaoŋ] 'your mouth' (< *kao* 'mouth' + *ŋao* '2sg poss')

83) a. [kumaŋa] ~ [kumaŋ] 'work' (< *kuma* 'to do' + *ŋa* 'NOM')
b. [taraŋa] ~ [taraŋ] 'chair' (< *tara* 'to sit' + *ŋa* 'NOM')
c. [kaniŋi] ~ [kaniŋ] 'food' (< *ukani* 'to eat' + *ŋi* 'NOM')

84) a. [atuŋu] ~ [atuŋ] 'will come' (< *atu* 'to come' + *ŋu* 'IRR')
b. [kelaŋa] ~ [kelaŋ] 'will see' (< *kela* 'see' + *ŋa* 'IRR')
c. [paroŋo] ~ [paroŋ] 'will shoot' (< *paro* 'to shoot' + *ŋo* 'IRR')

Several observations arise from the forms in (82-84). First, /ŋ/ is involved in three common morphemes in Mengen: the inflectional morphemes '2sg poss', shown in (82), and 'irrealis', shown in (84); and the third the derivational nominalising morpheme, shown in (83). Nearly every case of optional word final vowel following /ŋ/ in the language involves one of these three morphemes. Another observation from (82-84) above is that the final vowel in all three affixes is always harmonic with the final stem vowel.

In addition to these words which optionally exhibit final closed syllables, there are other words which optionally exhibit medial closed syllables. These medial closed syllables occur in compounds as shown in (85), and reduplications as shown in (86).

85) a. ['to.to.ka.le] ~ ['tot.ka.le] 'to chop it completely' (*toto* 'to cut' + *kale* 'completely')
b. ['ki.ni.pa.tae] ~ ['kin.pa.tae] 'to lift it' (*kini* 'to lift' + *patae* 'upward')
c. [pe.'si.ŋi.ma.ta.na] ~ [pe.'siŋ.ma.ta.na] 'year' (*pesiŋi*[s] 'dance' + *mata* 'eye, center' + *na* 3sPOS)

86) a. ['ta.pu.ta.pʷe] ~ ['tap.ta.pʷe] 'to be sewing' (*tapu* 'to sew')
b. [ke.le.'ke.le] ~ ['kel.ke.le] 'to be looking at it' (*kele* 'to see it')
c. ['mu.ku.mu.kʷa] ~ ['muk.mu.kʷa] 'dark cloud' (*muku* 'dirty')

Consonant codas are not limited to nasals in these forms; they can be any consonant other than the voiced stops /b/ and /g/. These forms include both verbs and nouns.

The vowel in these forms is not predictable, and is always present in noncompounded or nonreduplicated forms, even before a vowel as shown for the roots *kini* 'to lift' and *tapu* 'to sow' in (87).

87) a. *ke kinia bega.* 'He lifted the wood.'
b. *he tapue mao.* 'He planted taro.'

Therefore I assume the vowel is present in the underlying forms and optionally deleted. In compounds and reduplications, this vowel deletion occurs at the morpheme boundary.

[s] This is a nominalisation of *pesi* 'to dance' with the addition of *-ŋi*.

3.5 Stress.

While stress is phonemic in Mengen, as shown in 2.3, it is to be noted that there are many words that generally carry stress in certain environments. I state these generalizations here and follow them with pertinent examples and any notable exceptions.

3.5.1 Generalisations in open syllables. If words contain only open syllables, they are most frequently stressed on the penultimate syllable, as in (88).

88) a. [la.'ma.si] 'coconut'
b. [bi.ri.'βi.ri] 'bed bug'
c. [ku.ru.'si.na] 'turtle'

The second most frequent position for stress is in initial position as in (89).

89) a. ['a.ma.la.ga] crocodile'
b. ['o.su.gu.na] 'darkness'
c. ['ga.la.ga.la.ŋa] 'dry'

3.5.2. Closed syllables. Closed syllables have a great tendency to be stressed throughout the language as in (90).

90) a. [ka.'βam.ba] 'bean'
b. [ma.'sin.si] 'collapsing'
c. ['kel.ke.le] 'seeing' (optional form: [ke.le.'ke.le])

Given that a lengthened consonant is both the coda of the previous syllable and the onset of the following syllable, this tendency accounts for stress before a long consonant as in (91).

91) a. ['lǫl.lǫ] 'stone'
b. [bu.lu.'βun.nʌ] 'hair'
c. ['mʌn.na.'mʌn.na.'si.gi] 'banana sp.'

Although it was argued above that diphthongs are phonemically sequences of vowels, syllables with phonetic diphthongs normally take stress as though they were closed syllables as shown in (92).

92) a. [ka.'maɥ] 'my hand'
b. [ba.'paj.a] 'to lay it flat upon something'
c. [ka.'laǫ.βe.ka] 'scattered'

While closed syllables generally take stress, there are exceptions. For example, in (93) the syllable closed with a long consonant does not take stress.

93) [tʌt.'ta.ra] 'to be sitting'

This is the reduplicated form of *tara* 'to sit'. As with other forms that are similar to (93), it is possible that it has historically lost a vowel (originally */tatatara/?) while the stress has remained on the original (often penultimate) syllable.

Similarly, while most syllables containing diphthongs receive stress, there are exceptions as shown in (94).

94) a. ['pe.laɥ] 'ocean'
b. ['ma.gio] 'surprised'

3.5.3. Affixation. Affixed words will tend to keep the stres on the same syllable of the root in all forms of the word. Note the various forms of the root *lo* 'liver' in (95).

95) a. ['lo] 'liver'
b. ['lo.ma.ta.na] 'to know' (add *mata* 'sharp' + *na* '3sPos')
c. [pa.'lo.ma.ta.na] 'to teach' (add *pa* 'CAUS')
d. [pa.ŋa.'lo.ma.ta.na] 'knowledge' (add *ŋa* 'IRR')

In all forms stress remains on the original root *lo* 'liver'.

There are, however, a number of affixes which generally cause the stress to shift. Words ending with the two syllables *-ŋa-* 'NOM' and *-na* '3sPos' take penultimate stress as shown in (96).

96) a. [bo̤l.laɥ.'ŋa.na] 'its size' (cf. ['bollaɥ] 'big')
b. [ga.βi.li.'ŋa.na] 'its length' (cf. [ga'βili] 'long')

These two morphemes together are commonly found on qualitative words to form their related abstract nouns. They will cause the stress to shift to the penultimate syllable, even if there is a long consonant or diphthong in the root.

Other words ending in *-na* '3sPos' also generally receive stress on the penultimate syllable as exemplified in (97).

97) a. [ka.'ma.na] 'his hand' (cf. ['ka.ma] 'hand')
b. [gi.gi.'pu.na] 'type of sea shell'

Stress also shifts in certain cases of reduplication. If a phonetically palatalised [ʲ] is reduplicated as [li], the reduplicated syllable will invariably receive primary stress, as shown in (98).

98) [ga.'li.ʲu] 'to be returning' (cf. ['ga.ʲu] 'to return')

Irrealis verb forms ending in *-ŋa/-ŋe* 'IRR' will tend to have stress on the antepenultimate syllable of the word as in (99).

99) a. [pa.ŋa.lo.ma.'ta.na.ŋe] 'will teach him' (cf. [pa.ŋa.'lo.ma.ta.na] 'to teach')
b. [bo.ŋa.'ka.la.ŋe] 'will prohibit him' (cf. ['bo.ka.le] 'to prohibit him')
c. [o.siŋ.'ru.ru.ŋe] 'will destroy it' (cf. [o.si.'ru.ru] 'to destroy it)

There is a strong tendency to stress transitive verbs with the patient marker suffix *-e* or *-a* on the first syllable of the word. Two-syllable transitive verb stems are stressed as in (100).

100) a. ['ba.li.a] 'to hit it'
b. ['i.nu.e] 'to drink it'
c. ['ke.le.ke.le] 'to be seeing it'
d. ['ka.li.ka.li.a] 'to be touching it'

Adverbially-affixed transitive verbs exhibit stress shift as shown in the forms of ['bu.lo] 'to inject' in (101).

101) a. ['bu.lo.pi.ta] 'to inject completely through'
b. ['bu.lo.pi.te] 'to inject it completely through'
c. [bu.lo.'pi.ta.pi.te] 'to be injecting it completely through'

The root is inflected in (101a) by a closely bound adverbial suffix, *-pita* 'completely through'. This form is transitivized in (101b) by adding *-e* 'patient marker' to the adverbial rather than the root. The stress remains on the first syllable in (101b) as expected for a transitive verb. In (101c) the adverbial suffix *-pita* is reduplicated to form the continuative aspect. The stress does not remain on the initial syllable in (101c), however, but shifts to the first syllable of the adverbial suffix. Other adverbials which behave similarly are *-page* 'begin, continuous', *-paia* 'upon' *-kala* 'toward, nearly, approaching' and *-pisigi* 'downward'.

4 Morphophonemics

In this section I examine morphophonemic processes which are not necessarily pertinent to the syllable structure. This primarily concerns the patient marker on the transitive verb and the state of vowels over the morpheme boundary.

4.1 Verbal patient marker

Most transitive Mengen verbs take either *-e* or *-a* as an obligatory patient (object) marker suffix.[9] Consider the infinitive and transitive verb forms of the following verbs:

		Inf	Trans	
102)	a.	*amo*	*amoe*	'rub'
	b.	*ba*	*bae*	'send'
	c.	*kovu*	*kovue*	'chop'
	d.	*kiau*	*kiaue*	'call'
	e.	*tao*	*taoe*	'walk'
103)	a.	*mate*	*matea*	'like'
	b.	*ossi*	*ossia*	'lose'
	c.	*sai*	*saia*	'sew'
	d.	*tae*	*taea*	'climb'

The transitive verbs in the above paradigms show the two main patient marker suffixes in the language, *-e* and *-a*. As seen in (102), *-e* is suffixed on stems ending in a [+back] vowel, and as seen in (103), *-a* is suffixed on verb stems ending in a [-back] vowel.

There is a small subset of verbs that do not follow the pattern for verbs ending in a [+back] vowel. In these verbs the stem-final vowel is deleted when the patient marker is added as shown in (104-105).

104) a. /kela/ 'see'
b. /kelɛ/ 'see it' */kelae/
105) a. /loŋo/ 'hear'
b. /loŋɔ/ 'hear it' */loŋoɛ/

There are phonetically similar verbs, however, which do retain the root-final [+back] vowel as expected. Compare the (104-105) with (106-107).

[9] There are two classes of transitive verbs in Mengen. Class I verbs make up 95% of the transitive verbs and are marked with patient marker suffixation of *-e* and *-a*. Class II verbs make up the remaining 5% of the transitive verbs and are marked with *-ka* affixation for patient marker.

106) a. /kala/ 'shove'
b. /kalae/ 'shove it' */kale/ 'shove it'
107) a. /siŋo/ 'smell'
b. /siŋoe/ 'smell it' */siŋe/ 'smell it'

It is unclear why the final stem-vowel deletes in verbs such as *kela* 'to see' and *loŋo* 'to hear', but not in quite similar verbs such as *kala* 'to shove' and *siŋo* 'to smell'.

4.2 Vowels at Morpheme Boundaries

The most prevalent morphophonemic tendencies affecting vowels at morpheme boundaries are discussed in this section. Several processes referred to, however, do not seem to affect all vowels in the same environment. Also, some of the morphophonemic changes appear to be relatively obligatory, while some tend to be more optional.

4.2.1 Consonant cluster formation. Consider the forms in (108-109).

108) /bale lae-ala/ ([bʌlːaçala]) 'that house'
house LOC-there
109) /matana te/ ([matante]) 'a (one) type'
type a

Here the process of consonant cluster formation is shown when a word final vowel optionally deletes before a following consonant initial morpheme. A major restriction governing this morphophonemic process is that the newly formed consonant cluster (which is always across the syllable boundary in Mengen) must already exist in the language. For example, the cluster formed by vowel final deletion in (108) is [lː] which occurs in such words as [lǫlːǫ] 'stone' and [mʌlːʌ] 'to the side'. The cluster [nt] in (109) is also already an unambiguous consonant cluster as seen in words like *tonte* 'cutting' and *binte* 'rainy season'. This consonant cluster formation tends to occur much more frequently in spoken, rather than written, forms. All vowels have the potential of deleting if, as mentioned, the resultant consonant configuration is present in the language.

4.2.2 Vowel deletion. Below are examples involving the transitive verb patient marker (PM) *-ka-* followed by the object pronoun forms.

110) *rokata-me k-eke-kuma-k-au.*
doctor-pl REAL-3p-work-PM-1s
'The doctors treated me.'

111) *k-a-l-au-mata-na-ka-miau.*
REAL-1s-know-1sPos-eye-3sPos-PM-2p
'I know you(pl).'

In (110) the *a* of patient marker *-ka-* has deleted before vowel initial *-au* '1s'. But in (111) it has not deleted before consonant initial *-miau* '2p'.

The pronominal paradigm in example (112) below shows this transitive patient marker *-ka-* followed by each object pronoun free form.

112) a. *-kau* '1s'
b. *-kone* '2s'
c. *-kia* '3s'
d. *-kita* '1pn'
e. *-kamaɣa* '1px'
f. *-kamiau* '2p'
g. *-kerea*[10] '3p'

As shown in (110-112), *-ka-* 'PM' and the free pronoun become a bound form which acts as a double suffix on the verb root.[11] When this occurs, the *a* of the PM *-ka-* deletes when it precedes a vowel initial pronoun as shown in (112a-d).

Other instances of vowel deletion are shown in (113) and (114) below.

113) a. /agau a koatali/ [agau a koatali]
person NOM poison
'sorcerer'

b. /agau a agasila/ [agau agasila]
person NOM visitor
'guest'

114) a. /kao-gu/ [kaǫɣu]
mouth-1sPos
'my mouth'

b. /mata-au/[12] [mataɥ]
eye-1sPos
'my eye'

[10] The Mengen language generally shows only minimal instances of vowel harmonization. One rare case is the formation of *-kerea* '3p' in that *a* of *-ka-* harmonizes with the *e* of *-rea*.

[11] This bound form can never stand alone and may be affixed only onto a verb root.

[12] The suffix '1sPos' can be either *-gu* as in (114a) or *-au* as in (114b). Therefore, each applicable word in the lexicon must be appropriately marked for which variant of the suffix it takes.

The derived forms in examples (113b) and (114b) above show that a sequence of identical vowels degeminates across a morpheme boundary.

Vowel deletion also applies in a set of forms which introduce time-dependent clauses. This set is formed by combining *ina* 'time, when' with the set of realis verbal prefixes as shown in (115).

115) *ina* (cf. *ka* '1sREAL') 'when I...'
ino (cf. *ko* '2sREAL') 'when you(sg)...'
ine (cf. *ke* '3sREAL') 'when he...'
inaka (cf. *kaka* '1pnREAL') 'when we(incl)...'
inaka (cf. *kaka* '1pxREAL') 'when we(excl)...'
inaka (cf. *kaka* '2pREAL') 'when you(pl)...'
ineke (cf. *keke* '3pREAL') 'when they...'

I suggest that in the construction of these forms there is first the rare occurrence in Mengen of initial consonart deletion, in this case the *k* of the verbal prefix. This results in the *a* of *ina* deleting before the now-initial vowel of the verbal prefix.

4.3 Consonant harmony.

Consonants are rarely involved in any morphophonemic changes in Mengen. One of the few instances is shown in the paradigm for the modal verb 'must' in (116).

116) a. *manau* '1s'
b. *manin̪i* '2s'
c. *manena* '3s'
d. *marera* '1pn'
e. *manamaŋa* '1px'
f. *manamiau* '2p'
g. *marerea* '3p'

In (116d,g), *n* becomes *r* before an *r*-initial suffix.

Besides this *n/r* alternation, the only other example of any kind of consonant harmony in Mengen would be the morphophonemic formation of geminate consonants to form some types of continuative verbs.

5 Intonation

The patterns of intonation are signaled basically by various levels of pitch and loudness, as well as by voice quality. Pitch, for example, is the sole criterion for differentiating a simple statement from its parallel yes/no question as in (117).

117) a. i ŋe atu bole. 'He will likely come also.'

b. i ŋe atu bole? 'Will he likely come also?'

With information questions with lexical interrogative words, the tendency is to raise the pitch on the main verbal element in the question as in (118).

118) a. ko atu ta taru? 'What did you come to do?'

b. leo ke lola aetai? 'Where is Leo going?'

c. ko maimia, na ko pu? 'What did you do (to cause you) to fall?'

Sentence (118c) contains a common rhetorical question device, *ko maimia*, which is literally 'what is there about you?' This simple rhetorical question device, as well as all other types of rhetorical questions generally, is like basic information questions in that it takes raised pitch on the primary verbal element.

Anger is expressed with a forceful tone of voice with each syllable expressed clearly. Often the utterances are short as in (119).

119) ka nakoŋo! 'Get away from there!'

Disgust is signaled by shaking the head, often accompanied by an elongated [ssssss]. An utterance might also be marked by a general lowering of pitch such as in (120).

120) ke sane pe. 'That's not good.'

Scolding seems to be very infrequent. When spoken, however, it may be done with only a single forceful syllable or two, possibly accompanied by an elongated [ssssss] as an expression of disgust as in (121).

121) a. ka! s-s-s-s-s. 'Get away!'

b. ke sa! 'No!'

Doubt may often be verbalized with rising intonation followed by the conjunction 'or' coupled with a slightly falling, elongated intonation as in (122).

122) ka sana laumatana, leo ke giŋgiŋi, o...?
'I don't know, is Leo strong, or... (is he not)?'

Expectation of reply also generally follows this pattern.

The listing of separate elements is often accompanied with hand motions, starting with an open hand, palm up and fingers stretched out. Then, as things are listed, the other hand first folds down the small finger, then the ring finger, then the middle finger, etc. As each element of the list is mentioned, it is marked by a slightly rising intonation and a definite pause between each element as shown in (123).

123) taime ke atu? leo, // (bae) pius, // alois, // pita...'
'Who all came? Leo, (and) Pius, Alois, Pita...'

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